

Sustainable Energy Advantage, LLC



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Qualifications

Robert C. Grace

Sustainable Energy Advantage, L.L.C. (Natick, MA)

President, 1998-present (incorporated 1999, previously operated as Sustainable Energy Solutions)

By applying comprehensive and interdisciplinary expertise in renewable energy supply, demand, and delivery, SEA provides strategic, policy, marketing, product development and pricing, negotiation, and analytical support to private, public and non-profit organizations. Assist in developing wholesale and retail renewable electricity businesses, as well as market infrastructure, viable policies and programs supporting the role of renewable resources in electric markets. Instrumental in developing certification, rating, and accounting/verification programs, influencing market rules, and developing and implementing public policies in support of renewable energy including state Renewable Portfolio Standards and funding programs to expand renewable supply and demand.

AllEnergy Marketing Company, LLC (A venture of the New England Electric System) (Waltham, MA)

Director, ReGen Division, 1997-1998

Championed ReGen, the “green” power marketing division, created business plan, designed wholesale and distribution channel strategy, from conception to implementation. Responsible for management and budget; supply procurement, portfolio management & delivery; product design and pricing; marketing and sales; and policy activities in highly uncertain market.

- Developed the first competitive retail product offering in the New England electric market, and the first competitive green power offering in the eastern U.S., an innovative, high-value retail renewable energy credit-based offering designed to overcome market obstacles and uncertainties.
- Developed and negotiated innovative, low cost and flexible supply contracts, options and strategic partnerships/alliances with renewable power suppliers, facilitating early development of new renewable resources to serve opening competitive retail markets.
- Negotiated first-of-its-kind joint windpower development agreement.
- Built solid relationships with target distribution channels.
- Developed and maintained strong market-based relationships with allies of environmentally preferable power; negotiated unprecedented “Cooperative Agreement” with Environmental Defense Fund to advise on business plan, charter, product definition and communications; and built ReGen reputation for integrity and excellence among influencers.
- Served as a founding Board Member of the Renewable Energy Alliance trade group.

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- Key negotiator in multi-stakeholder Green-e (NE) green power certification program.
- Played consensus-building role in regulatory, legislative, settlement and technical workshop processes developing market rules, regulations, standards of conduct, and legislation to support disclosure, tracking, and workable markets for renewable electricity.

New England Power Company (a subsidiary of the New England Electric System (Westborough, MA))

Generation Marketing Dept: Principal Analyst, 1994-1997, Senior Analyst 1993-94

Instrumental in successfully shepherding NEES, a pioneer in deregulation/restructuring, through the first complete integrated electric utility restructuring in the US.

- Served as Wholesale Business Unit representative to all NEES industry restructuring teams developing strategy to implement unbundling and retail choice, and supporting Federal and state industry restructuring proceedings, including drafting testimony and market rules.
- Developed company position and strategy, and analyzed financial impact and risk of Standard Offer service, eliminating fuel clause, and instituting virtual direct access.
- Developed electric market price projections for internal analysis, stranded cost recovery support.
- Played instrumental role in developing comparable open access transmission & ancillary services tariffs.
- Developed wholesale “green” marketing business plan.
- Managed winning proposal for long-term all-requirements power supply to Nantucket Electric Company which led to corporate acquisition.
- Developed strategy, analyzed markets for retail competition.
- Participated in NH and MA electric choice retail pilot program, including development of pilot programs and wholesale supply of “commodity” and “green” competitors.
- Negotiated monthly to multi-year power sales and purchase contracts.
- Wrote short-term marketing plan and developed new wholesale products.
- Led team optimizing operations, fuel switching to minimize environmental compliance costs and risks. Participated in teams developing incentive-based rates and implementing Clean Air Act compliance.

U.C. Berkeley - Project funded by the Electric Power Research Institute -- Environment Div.

Graduate Student Research Assistant, 1993

Investigated the potential of intermittent redispatch of electric power systems as an ozone abatement strategy as member of team awarded research grant.

California Public Utilities Commission (Division of Strategic Planning) and Pacific Gas & Electric Company (Corporate Planning Dept.)

Graduate Student Intern/Independent Contractor/Special Project, 1992-93

Initiated and performed jointly supported feasibility and cost-effectiveness study of intermittent, emission-biased electric system dispatch for combating smog episodes. Optimized operational vs. engineering emission control techniques using production modeling to demonstrate cost saving potential of nearly \$100 million.

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La Capra Associates (Boston, MA) -- *Senior Analyst, 1985-91*

Consulting work specializing in utility resource planning, cost analysis, rate design, load management, budgeting, financial and load forecasting, computer modeling and regulatory support for over 20 electric and gas utility clients.

- Managed power supply portfolio management function for an electric utility.
- Managed and performed least cost, need analyses for IPP cogeneration plant siting approvals.
- Testified as an expert witness on power supply valuation and cost issues.
- Prepared, recommended, analyzed and evaluated financial and power supply restructuring proposals during debt restructuring negotiations between a utility and its creditors.
- Prepared least-cost supply plan and developed probabilistic dispatch modeling methodology for a transmission isolated electric system's resource plan filing; performed dispatch modeling and production cost analysis of numerous electric & gas systems.
- Assisted IPP developer in market evaluation and power sales.
- Negotiated lease of electric transmission capacity.
- Served as representative on utility task force planning the import of power from Hydro-Quebec.
- Developed capacity planning, financial forecasting, load analysis, rate design computer models.

Applied Resources Group (Brookline, MA) -- *Energy Analyst/Programmer, 1985*

Designed rate analysis, demand modeling and load management software; tested, refined and documented energy management software; performed feasibility studies of cogeneration and photovoltaic systems.

QED/Seaver Associates (Needham, MA) -- *Energy Management Research Associate, 1983-84*

Performed computer analysis of solar thermal heating, energy efficiency, and thermal storage.

Education

Energy & Resources Group, University of California, Berkeley

M.S., Energy & Resources, 1991-93 - U.C. Regents Fellow

Thesis: *Intermittent Environmental Dispatch of Electric Power Systems for Ozone Control.*

Brown University

Sc.B., Energy Studies, 1980-84 - Magna Cum Laude; Elected to Sigma Xi

Senior Project: *The Power of Dynamic Simulation as a Solar Building Design Tool.*

Other Coursework

Environmental Regulation (Tufts Univ.); Statistics, Accounting, Finance (Harvard University Ext.)



Robert C. Grace – Presentations, Lectures and Testimony

American Wind Energy Association WindPower 2006 Conference, *Indicators for RPS Effectiveness in Stimulating WindPower in the Eastern U.S.*, June 7, 2006.

American Wind Energy Association Renewable Portfolio Standards Workshop, *RPS Policies in Restructured Markets: RPS in the New England*, March 8, 2006.

Northeast Energy & Commerce Association - Successful Renewable Energy Development in New England, *Overview: The Hedge Value of Renewable Energy to Generators & Customers*, March 1, 2006.

American Wind Energy Association WindPower 2005 Conference, *Birth of a New Market: Financing Wind Projects via Long Term Hedge Contracts with Large End-Users*, May 16, 2005.

EUCI Renewable Portfolio Standards Conference: The Eastern Perspective, *RPS Roundtable: In A Perfect World... RPS Experience, the Good, the Bad, and the Ugly*, April 13, 2005.

The Future of the Nevada RPS – Workshop: *Renewable Energy Credit Trading and Tracking in the West*, November 4, 2004.

Utility Wind Interest Group Wind Integration Technical Workshop, *Wind Project Developments: What's Happening in New England*, October 27, 2004.

Global Wind Power 2004, Session Chair for Panel on *Definition and Control of Green Attributes*, March 30, 2004.

Northeast Energy & Commerce Association 2004 Renewable Energy Conference – *New England Renewable Energy Supply and Demand Outlook*, March 18, 2004.

Commonwealth of Massachusetts before the Department of Telecommunications and Energy, D.T.E. 03-100 Petition of Boston Edison Company, Cambridge Electric Light Company and Commonwealth Electric Company d/b/a NSTAR Electric pursuant to G.L. c. 164 § 94 and 220 C.M.R. §§ 5 et seq. for approval of a new renewable power supply offering, *direct testimony on behalf of the Cape Light Compact and Massachusetts Energy Consumers Alliance*. January 2004.

Northeast Energy and Commerce Association Conference: Wholesale Power Markets in New England – After LMP and the Blackout - *Expanding the Connecticut Renewable Portfolio Standard*, November 20, 2003.

Rhode Island Renewable Energy Customer Aggregation - University Workshop - *Current Renewable Energy Development in New England*, November 13, 2003.

The Energy Consortium -*Renewable Portfolio Standard: An Update*, October 22, 2003.

The Energy Consortium - Using Wind Power to Hedge Large End-Users' Electric Bills, October 22, 2003.

Oral Comments (on behalf of the Union of Concerned Scientists) before the Connecticut DPUC in Docket 02-04-14 (Connecticut RPS), Public Hearing - September 25, 2003

New York RPS Modeling Workshop, (NY PSC Docket 03-E-0188 – Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard), *Modeling the Impacts of a NY Renewable Portfolio Standard*, June 27, 2003.

Massachusetts Restructuring Roundtable - *Renewable Energy Markets: Trends in the Northeast*, June 12, 2003.

Northeast Energy and Commerce Association, 10th Annual New England Energy Conference - *Renewable Energy Markets: Trends in the Northeast*, June 3, 2003.

Testimony before R.I. House Environment & Natural Resources Committee, In the Matter of HB5533 (RPS Legislation), May 28, 2003.

American Wind Energy Association WindPower 2003 Conference - *Using Wind Power to Hedge Large End-Users' Electric Bills*, May 21, 2003.

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- National Geothermal Collaborative - Creating Geothermal Markets: *Evaluating Experience with State Renewables Portfolio Standards*, May 12, 2003.
- National Conference of State Legislators - *Policy Tools for State Support of Renewable Energy*, April 25, 2003.
- New York RPS Collaborative Forum - *Crafting an RPS for New York: An Orientation to State RPS Policy Experience and Design*, April 7, 2003.
- New York RPS Collaborative Forum - *Transacting Generation Attributes Across Market Boundaries: Eligibility Options & Implications*, April 7, 2003.
- Green-e New England Advisory Committee Meeting - *New England Renewable Energy Supply Outlook*, March 12, 2003.
- Green-e New England Advisory Committee Meeting - *Rhode Island Renewable Energy Fund Green Power Supply and Demand Programs*, March 12, 2003.
- Rhode Island Greenhouse Gas Action Plan Stakeholder Group - *RI's Renewable Portfolio Standard: Overview of Design Recommendations*, February 12, 2003.
- Rhode Island Greenhouse Gas Action Plan Renewable Portfolio Standard Working Group:
RI's Renewable Portfolio Standard: Remaining Design Decisions, January 24, 2003.
Rhode Island's Renewable Portfolio Standard: A Draft Design Proposal, December 4, 2002.
Crafting a Renewable Portfolio Standard for Rhode Island, October 15, 2002.
- Massachusetts Renewable Portfolio Standard Advisory Group - *Massachusetts RPS: 2002 Cost Analysis Update – Sensitivity Analysis*, December 16, 2002.
- Massachusetts Restructuring Roundtable - *Transacting Generation Attributes Across Market Boundaries: Eligibility Options & Implications*, December 13, 2002.
- Massachusetts Renewable Portfolio Standard Advisory Group - *Massachusetts RPS: 2002 Update to December 2000 Report of Certificate Costs*, November 7, 2002.
- Seventh National Green Power Marketing Conference - “Expanding Markets Through Innovation” - *Status of Green Power in the Northeast*, September 30, 2002.
- Northeast Sustainable Energy Assoc. Building Energy 2002 - *Rhode Island Renewable Energy Collaborative – A Progress Report*, March 21, 2002.
- New England Regional Wind Issues Workshop - *Policies & Programs to Support Renewable Energy in New England*, October 25, 2001.
- New England Renewable Power Producers Assoc. Second Annual Meeting - *Policy Drivers for Renewable Energy in the Northeast*, September 19, 2001.
- NREL Energy Analysis Forum - *Renewable Energy Outlook for the Northeast*, August 13, 2001
- Renewable Energy Workshop for Federal Facility Managers – *Federal Procurement of Green Power*, May 23, 2001.
- Northeast Sustainable Energy Assoc. Building Energy 2001 - *Renewable Portfolio Standards in the Northeast*, March 23, 2001.
- Association of State Energy Research and Technology Transfer Institutions Fall Meeting - *Renewable Credit Trading and RPS Compliance: Necessities & Complexities in a Retail Choice Environment*, October 18, 2000.
- Northeast Energy & Commerce Association – 7th Annual Conference for the New England Energy Industry – *Competitive Renewable Power: Tradable Credits, Power Exchanges, and Other Business Opportunities*, May 17, 2000.
- Ontario Power Generation – QUEST Sessions – *The Role of Green Power in a Deregulated Market*, March 21, 2000.
- Massachusetts Division of Energy Resources - Renewable Portfolio Standard Advisory Group:

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- Massachusetts RPS: Administration Issues & Information Requirements*, March 30, 2000.
- Massachusetts' RPS: Other Accounting-Related Policy Coordination Issues*, March 30, 2000.
- Massachusetts' RPS: Accounting & Verification Mechanisms and Policy Coordination*, March 9, 2000.
- Massachusetts' RPS: New Renewable Early Start Trigger*, February 17, 2000.
- Massachusetts Renewable Portfolio Standard: Design Issues*, February 17, 2000.
- Massachusetts Renewable Portfolio Standard: Eligibility*, January 27, 2000.
- Massachusetts Renewable Portfolio Standard: Treatment of Existing Renewables*, December 9, 1999.
- Massachusetts Renewable Portfolio Standard: Applicability Issues*, November 22, 1999.
- Massachusetts' Renewable Portfolio Standard: An Issues Overview*, October 27, 1999.
- Implementing the New Environmental Standards – RPS, Information Disclosure and GPS - *Obtain Power Supply From Renewable Resources to "Green-up" Your Portfolio*, January 21, 2000.
- Implementing the New Environmental Standards – RPS, Information Disclosure and GPS - *Policy Coordination of Environmental Standards: A Massachusetts Case Study*, (also moderator of Policy Coordination workshop), January 20, 2000.
- Wind Power and the Environment Workshop – Doing it Right in the Northeast – *Prospects for Developing Regional Wind Siting Standards/Guidelines for the Northeast*, July 14, 1998.
- Boston Bar Association (Energy Law and Clean Air Committees) - *"Green" Power – the Next Frontier for Personal and Corporate Environmental Action, and AllEnergy's ReGen Renewable Power Upgrade Service*, June 3, 1998.
- EnviroExpo NE – *"Green" Power – the Next Frontier for Personal and Corporate Environmental Action*, May 5, 1998
- Independent Energy Producers of Maine Annual Mtg. (Keynote address) *A View of the Future for Renewable Energy*, Dec. 3, 1997.
- National Wind Coordinating Council Wind Energy Issues Forum - *Transmission Challenges Faced by Wind Power in New England* - November 7, 1997.
- National Wind Coordinating Council Wind Energy Issues Forum - *Market Risks and Uncertainties Facing New England Wind Development* - November 7, 1997.
- Center for Energy Efficiency and Renewable Technologies/ John Merck Fund - Promoting Green Power in New England Meeting: *Opportunities for "Green" Power in a Deregulated Electricity Market* - July 28, 1997.
- Council of State Governments - Eastern Regional Conference: Forum on Electric Industry Restructuring in the Northeast - *The Role of Renewable Energy in a Deregulated Electricity Market* - July 27, 1997.
- New England Disclosure Working Group - *Disclosure, Verification and Certification in Competitive Electric Markets: A Green Marketer's Perspective* - June 1997.
- National Council on Competitiveness, Electricity Consumer Information Disclosure Eastern Regional Workshop: *Disclosure, Verification and Certification in Competitive Electric Markets: A Green Marketer's Perspective* - June 1997.
- Clean Power '97 Conference - *Requirements for a Vibrant Wholesale Green Power Market* - May 28, 1997.
- Assoc. of Energy Services Professionals - *"Green" Power Marketing for New England's Competitive Markets* - May 21, 1997.
- EPRI Second National Green Pricing and Green Power Marketing Conference - *Mutual Funds as a Model for Green Power Marketing Disclosure, Verification and Certification* - May 13, 1997.
- EPRI Second National Green Pricing and Green Power Marketing Conference: *The Challenge of Selling "Green" Power in Competitive Markets* - May 13, 1997.



Select List of Publications

Bolinger, Mark, Robert Grace, Douglas Smith, Ryan Wiser, et al, *Using Wind Power to Hedge Volatile Electricity Prices for Commercial and Industrial Customers in New York*, Report prepared for the New York State Energy Research and Development Authority, 05/03. See: <http://www.nyserda.org/programs/pdfs/WindHedgeFinalcomplete.pdf>

Grace, Robert C., Andrew Aulisi, Brent Beerley, Mark Crowdis & Theresa Howland, *Birth of a New Market: Financing Wind Projects via Long Term Hedge Contracts with Large End-Users*, Conference Proceedings of the American Wind Energy Association – Windpower 2005, 05/05.

Grace, Robert C., Mark Bolinger, Ryan Wiser et al, *Using Wind Power To Hedge Large End-Users' Electric Bills in New York*, Conference Proceedings of the American Wind Energy Association - WINDPOWER 2003, 05/03.

Grace, Robert C. and R. Wiser, *Transacting Generation Attributes Across Market Boundaries - Compatible Information Systems and the Treatment of Imports and Exports*, Prepared for U. S. Department of Energy and New York State Energy Research & Development Authority, published as a Lawrence Berkeley National Laboratory report, 11/02. See: http://eetd.lbl.gov/ea/EMS/reports/51703_exsum.pdf

Massachusetts Renewable Portfolio Standard Series: Project manager; primary or co-author on series of technical and policy white papers and reports on aspects, implications, designs, accounting and verification, and costs of Renewable Portfolio Standard. See: <http://www.state.ma.us/doer/programs/renew/rps.htm>

Wiser, Ryan, Kevin Porter, Robert Grace, *Evaluating Experience with Renewables Portfolio Standards in the United States*, Prepared for the Conference Proceedings of Global Windpower 2004 Chicago, Illinois: March 28-31, 2004, published as a Lawrence Berkeley National Laboratory report, March 2004. See: <http://eetd.lbl.gov/ea/ems/reports/54439.pdf>

Wiser, Ryan, Kevin Porter, Robert Grace, and Chase Kappel, *Evaluating State Renewable Portfolio Standards: A Focus on Geothermal Energy*, Published by the National Geothermal Collaborative Report, 6/03. <http://www.geocollaborative.org/publications/RPS.pdf>

Wiser, Ryan, Kevin Porter & Robert Grace, *Evaluating Experience with Renewables Portfolio Standards in the United States*, Mitigation and Adaptation Strategies for Global Change (2005) 10: 237–263, Springer, 2005.



Select List of Reports

Numerous reports, studies, business plans, market assessments, RFPs, for clients including:

- Blunden, Julie, Robert Grace, Jan Hamrin, Meredith Wingate and Ryan Wiser, *Customer Credit Account Research and Analysis Supporting the California Energy Commission's Renewable Energy Program Preparation of the Customer Credit Account Report for the Legislature*, Consultant's Report to California Energy Commission, 01/03. (Responsible for Appendix C: *Oregon and New York REC-Based Utility Buy-Through Programs*)
- Grace, Robert C., *Generation Information System Development: RFP Experience in Texas, New England and Ontario*, report to California Energy Commission for use by Western Renewable Energy Generation Information System working groups, 01/04.
- Grace, Robert C. and R. Wiser, *Crafting a Renewables Portfolio Standard for Rhode Island: Design Choices, Best Practices, and Recommendations*, prepared for the Rhode Island RPS Working group to the RI Greenhouse Gas Working Group, 11/02.
- Grace, Robert C., R. Wiser, and M. Bolinger, *Renewable Power Market Analysis of United States*, for [client], 1/02
- Grace, Robert C. K. Cory and D. Smith, *Cost Estimate of N.Y. Executive Order 111 Renewable Energy Purchase Provisions*, for New York State Energy Research & Development Authority, 10/01
- Grace, Robert C., *Analysis of the Impact of ISO-NY Rules on Intermittent Renewable Resources*, for Pace Energy Project 8/99
- Grace, Robert C., *Report on the May 30, 2001 New England Wind Power Brainstorming Meeting*, for National Renewable Energy Laboratory – Wind Powering America Program, 7/01
- Grace, Robert C., M. Tennis, R. Wiser, M. Bolinger, *RIREC – The Next Generation: An Assessment of the Opportunities for the Next Phase of Activity by the Rhode Island Renewable Energy Collaborative*, Rhode Island Renewable Energy Collaborative, 11/00
- Porter, Kevin, Robert Grace, and Ryan Wiser. *Summary of Recommendations: Legislative and Regulatory Actions to Consider For Ensuring the Long-Term Effectiveness of the Nevada Renewable Portfolio Standard*. Prepared for the Nevada Renewable Energy Task Force, December 3, 2004. http://energy.state.nv.us/taskforce/Annual%20Report/05%20RETF%20report%20Vol.%20III_final.pdf
- Wiser, Ryan H., R. O'Connell, M. Bolinger, R. Grace, and R. Pletka, *Building a "Margin of Safety" Into Renewable Energy Procurements: A Review of Experience with Contract Failure*, Consultant's Report to California Energy Commission, January 2006.
- Green power business plans or market assessments for AllEnergy Marketing Company, New England Power Co., Ontario Power Generation, Connecticut Energy Cooperative, Cooperative Pioneers, (confidential) multi-national generation company/power marketer
- Renewable energy solicitations for Connecticut Clean Energy Fund, Connecticut Energy Cooperative, Massachusetts Energy Consumers Alliance, New York State Energy Research and Development Authority, Ontario Power Generation, PowerOptions, R.I. Renewable Energy Fund, State of New York, State of Rhode Island, and UPC Wind Management.



Committees

NEPOOL Generation Information System Working Group | Massachusetts Technology Collaborative's Green Power Working Group | New England Green-e Advisory Committee | Center for Resource Solutions' Tradable Renewable Certificates working group | Green-e national TRC certification standard committee | New England Disclosure Working Group | National Council on Competitiveness, Electricity Consumer Information Disclosure Regional Workshop | Planning committees for DOE Wind Powering America & National Wind Coordinating Council regional wind issues forums | Peer review of publications | NYSERDA and Connecticut Clean Energy Fund Technical Evaluation Panels.